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IS 140 (1980): Ready mixed paint, exterior, petrol resisting, air drying [CHD 20: Paints, Varnishes and Related Products]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 140 - 1980
(Superseding IS : 141 - 1950)
(Reaffirmed 2011)

Indian Standard
SPECIFICATION FOR
READY MIXED PAINT, EXTERIOR,
PETROL RESISTING, AIR DRYING
(*First Revision*)

UDC 667.633 : 667.635.3



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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002



AMENDMENT NO. 1 SEPTEMBER 1984

TO

**IS : 140-1980 SPECIFICATION FOR READY MIXED PAINT,
EXTERIOR, PETROL RESISTING, AIR-DRYING**

(First Revision)

Alterations

[*Page 6, Table 1, Sl No. (x) and (xi)] - Delete.*

(Page 6, Table 1, foot-note with '†' mark) -
Delete.

(CDC 8)

Reprography Unit, ISI, New Delhi, India

Indian Standard
SPECIFICATION FOR
READY MIXED PAINT, EXTERIOR,
PETROL RESISTING, AIR DRYING
(*First Revision*)

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Indian Standard
SPECIFICATION FOR
READY MIXED PAINT, EXTERIOR,
PETROL RESISTING, AIR DRYING
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 18 June 1980, after the draft finalized by the Paints and Allied Products Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was first published in 1950 and was based on interim coordinated draft prepared by the Subcommittee of the No. 5 Standing Committee on Specifications for Paints and Allied Stores of the General Headquarters, India (now Army Headquarters).

0.3 In this amalgamated revision of IS : 140-1950* and IS : 141-1950† restriction on composition and requirements for spreading capacity and spreading time have been dropped. The requirement for fastness to light has also been dropped and instead a requirement for durability has been included. The requirement for 'opacity' has been changed as 'wet opacity'. An additional requirement for suitability for thinning has been included. For testing resistance to petrol an immersion for one hour has been prescribed instead of 15 minutes when the material is intended for Defence uses. The requirement for scratch hardness has been changed as resistance to mechanical damage after immersion in petrol and lubricating oil. The title of the standard has also been simplified.

0.3.1 By publication of this revised standard, IS : 141-1950† shall stand superseded.

0.4 This standard contains clause **5.1** which calls for agreement between the purchaser and the supplier.

*Specification for ready mixed paint, brushing, petrol resisting, air-drying, for exterior painting, containers, colour as required.

†Specification for ready mixed paint, spraying, petrol resisting, air-drying, for exterior painting of containers, colour as required.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2 - 1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes requirements and methods of sampling and test for the material commercially known as ready mixed paint, petrol resisting, air-drying, for exterior painting of containers, colour as required.

1.1.1 The material is used for the exterior protection of containers for petrol, mineral oils and lubricants. The material is such that on air-drying it gives a film which can stand handling, without damage, whilst wetted with petrol, mineral oils and lubricants.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 1303-1963† and 2 of IS : 101-1964‡ shall apply.

3. GLASSES

3.1 The material shall be supplied in brushing consistency but shall be suitable for application by spraying after thinning with petroleum hydrocarbon solvent, 145/205 low aromatic grade conforming to IS : 1745-1978§.

4. REQUIREMENTS

4.1 Composition — The material shall be of such composition as to satisfy the requirements of this standard.

4.2 Suitability for Thinning — The material shall be suitable for application by spraying when thinned to 20 to 30 seconds determined in IS Cup No. 4 at $27 \pm 1^\circ\text{C}$ with petroleum hydrocarbon solvent, 145/205 low aromatic grade conforming to IS : 1745-1978§.

*Rules for rounding off numerical values (*revised*).

†Glossary of terms relating to paints (*revised*).

‡Methods of test for ready mixed paints and enamels (*second revision*).

§Specification for petroleum hydrocarbon solvents (*second revision*).

4.3 Resistance to Mechanical Damage After Immersion in Petrol and Lubricating Oils — The material when tested as prescribed in Appendix A shall pass the test.

4.4 Durability — The material when tested as prescribed in Appendix B shall pass the test.

4.5 The material shall also conform to the requirements prescribed in Table 1.

TABLE 1 REQUIREMENTS FOR READY MIXED PAINT, EXTERIOR, PETROL RESISTING, AIR-DRYING

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO CL No. IN IS : 101-1964*
(1)	(2)	(3)	(4)
i)	Consistency	Smooth and uniform and suitable for application by brushing without appreciable drag on the brush	7.4
ii)	Drying time:		7.1 and 7.2
	a) Surface dry	Not more than 3 hours	
	b) Hard dry	Not more than 6 hours	
	c) Tack free	Not more than 18 hours	
iii)	Finish	Smooth and matt or semigloss or full-gloss as agreed to between the purchaser and the supplier	7.5
iv)	Wet opacity	Between —10 percent and +20 percent of the approved sample	10
v)	Colour	Close match to the IS Colour where specified or to the approved sample where IS colour is not specified	11
vi)	Residue on sieve, percent by mass, <i>Max</i>	0.3	13
vii)	Water content (if water is suspected to be present), percent by mass, <i>Max</i>	0.5	14

*Methods of test for ready mixed paints and enamels (*second revision*).

(*Continued*)

TABLE 1 REQUIREMENTS FOR READY MIXED PAINT, EXTERIOR,
PETROL RESISTING, AIR-DRYING — *Contd*

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO CL NO. IN IS : 101-1964*
(1)	(2)	(3)	(4)
viii)	Flexibility and adhesion after 48 hours air-drying	No visible damage or detach- ment of film	16
ix)	Protection against corrosion	No signs of breakdown or corrosion	18
x)	Resistance to lubricating oil	No permanent injury	19
xi)	Resistance to petrol	No permanent injury	21†
xii)	Flash point	Not below 30°C, unless the lower temperature of 23°C is agreed to between the purchaser and the supplier	24
xiii)	Mass in kg/10-litres	Within 3 percent of the approved sample	25
xiv)	Lead restriction	To pass the test	28
xv)	Calcium compounds	Not more than 5 percent by mass on pigment when expressed as calcium carbonate	30
xvi)	Keeping properties	Not less than one year	31

*Methods of test for ready mixed paints and enamels (*second revision*).

†After 1 h emersion when the material is intended for Defence uses.

5. PACKING AND MARKING

5.1 Packing — Unless otherwise agreed to between the purchaser and the supplier, the paint shall be packed in sound metal containers conforming to IS : 1407 - 1968* or IS : 2552 - 1979†.

*Specification for round paint tins (*first revision*).

†Specification for steel drums (galvanized and ungalvanized) (*second revision*).

5.2 Marking— The containers shall be marked with the following information:

- a) Name and colour of the material;
- b) Manufacturer's name and his recognized trade-mark, if any;
- c) Volume in litre of the material;
- d) Batch No. or lot No. in Code or otherwise; and
- e) Month and year of manufacture.

5.2.1 The containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5.3 Other details of packing and marking shall be in accordance with the instructions given by the purchaser.

6. SAMPLING

6.1 Representative samples of the material shall be drawn and prepared as prescribed under 3 of IS : 101-1964*.

6.2 Criteria for Conformity — A lot shall be declared as conforming to the requirements of this standard if the test results on the composite sample satisfy the requirements prescribed under 4.

7. TEST METHODS

7.1 Tests shall be conducted as prescribed in IS : 101 - 1964* and Appendices A and B. Reference to the relevant clauses of that standard is given in col 4 of Table 1 and that of Appendices in 4.3 and 4.4.

7.1.1 For match against IS colour, IS : 5 - 1978† shall be used.

7.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977‡) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

*Methods of test for ready mixed paints and enamels (*second revision*).

†Colours for ready mixed paints and enamels (*third revision*).

‡Specification for water for general laboratory use (*second revision*).

APPENDIX A

(*Clauses 4.3 and 7.1*)

TEST FOR MECHANICAL DAMAGE AFTER IMMERSION IN PETROL AND LUBRICATING OIL

A-1. PROCEDURE

A-1.1 Prepare two sets of tin plate panels of $150 \times 50 \times 0.315$ mm size and air dry as prescribed in **19** and **21** of IS : 101-1964*. Immerse one panel in lubricating oil at 50°C for 2 h and the other in petrol for 15 minutes as prescribed in **19** and **21** of IS : 101 - 1964* respectively. Take out the panels after the specified periods given above and observe the paint films. Subject both the panels to scratch hardness test under a load of 1 000 g, 30 minutes after being taken out of bath and after excess of oil has been wiped out from the panel, dipped in lubricating oil as prescribed in **15.1** of IS : 101-1964*. The requirement of the test shall be taken to have passed if no bare metal is visible under the scratch.

APPENDIX B

(*Clauses 4.4 and 7.1*)

TEST FOR DURABILITY

B-1. PREPARATION OF PANEL

B-1.1 Prepare a mild steel panel of approximately $150 \times 150 \times 1.25$ mm size as described in **5.2.1** of IS : 101 - 1964*, and paint with the material by brushing as prescribed, in a single coat, to give a dry film mass as specified in **6.4** of IS : 101 - 1964*. Allow the film of the material to air dry for 24 h at room temperature not below 15°C. Apply another coat of the material and allow the panel to air dry for 48 h.

B-2. PROCEDURE

B-2.1 Expose the painted panels, in duplicate, outdoors for 3 months at an angle of 45° facing south. At the end of the period examine the test panels under $\times 10$ magnification. The material shall be taken to have passed the durability test if there is no sign of checking, brittleness or other impairment of film integrity, not more than a trace of chalking and no

*Methods of test for ready mixed paints and enamels (*second revision*).

appreciable fading/darkening or change of colour and loss of gloss. In this respect the sample shall not be inferior to the approved sample when tested in the similar manner and at the same time.

NOTE — Provisional acceptance may be given on one month exposure on separate set of painted panels as follows, but the durability of the material shall be taken only after 3 months exposure as prescribed above. The painted panel shall be exposed outdoors for 25 days at an angle of 45° facing south. At the end of this period the panel shall be subjected to a fine spray of water for 6 hours at a temperature not above 30°C . (A suitable spray is provided by a water supply at a pressure of approximately 13.7 Kpa through a rose.) The treatment shall be carried out daily for six days. The test panels shall be exposed at an angle of 45° facing south between treatment.

INDIAN STANDARDS

ON

PETROL RESISTING PAINTS

IS:

- | | |
|----------|--|
| 140-1980 | Ready mixed paint, exterior, petrol resisting, air drying (<i>first revision</i>) |
| 142-1980 | Ready mixed paint, exterior, petrol resisting, stoving (<i>first revision</i>) |
| 144-1950 | Ready mixed paint, brushing, petrol resisting, air-drying, for interior painting of tanks and containers, red oxide (colour unspecified) |
| 145-1950 | Ready mixed paint, slushing, petrol resisting, air drying, for interior painting of tanks and containers, red oxide (colour unspecified) |
| 146-1950 | Ready mixed paint, brushing, petrol resisting, stoving, for interior painting of tanks and containers, red oxide (colour unspecified) |
| 147-1950 | Ready mixed paint, slushing, petrol resisting, stoving, for interior painting of tanks and containers, red oxide (colour unspecified) |

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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